

Three new species of *Atkinsoniella* (Hemiptera, Cicadellidae, Cicadellinae) from southwestern China

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Abstract

Three new species of the genus *Atkinsoniella* (Hemiptera: Cicadellidae: Cicadellinae), *A. chongqingana* Jiang & Yang, *A. likuni* Jiang & Yang and *A. biostiolum* Jiang & Yang, **sp. nov.**, collected from southwestern China, are described and illustrated. The two new species, *A. chongqingana* Jiang & Yang, **sp. nov.** and *A. likuni* Jiang & Yang, **sp. nov.**, are similar to *A. nigrominiatula* (Jacobi, 1944), *A. latior* Young, 1986, *A. limba* Kuoh, 1991, *A. dormana* Li, 1992, *A. divaricata* Yang, Meng & Li, 2017, *A. peaka* Yang, Meng & Li, 2017, and *A. zizhongji* Jiang & Yang, 2022 in appearances, but can be distinguished from these species by the characteristic of aedeagus, paraphysis, and pygofer. *Atkinsonella biostiolum* Jiang & Yang, **sp. nov.** can be distinguished from all the known *Atkinsoniella* species by its special color and markings, as well as males having one ostiole in the center of the base of each subgenital plate. A key to *Atkinsoniella* species from China is provided.

Key words: Auchenorrhyncha, China, leafhopper, morphology, taxonomy



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Introduction

Southwestern China includes Sichuan Province, Guizhou Province, Yunnan Province, Tibet Autonomous Region, and Chongqing Municipality. Due to its complex topography characterized by significant variations in altitude and numerous mountainous basins, many insects, including Cicadellidae, are rich in biodiversity in Southwest China. Of the 102 valid known species of the genus *Atkinsoniella*, 92 occur in China and distributed in 20 provincial administrative regions (Feng and Zhang 2015; Yang et al. 2017; Naveed and Zhang 2018; Jiang et al. 2022, 2023). Of the 92 known Chinese *Atkinsoniella* species, 72 species are distributed in Yunnan Province, 26 species in Guizhou Province, 21 species in Tibet Autonomous Region, 20 species in Sichuan Province, and 17 species are distributed in Chongqing Municipality (Yang et al. 2017; Jiang et al. 2023). In this study, the descriptions, male genitalia, and habitus photographs of three new species, *Atkinsoniella chongqingana* Jiang & Yang, **sp. nov.**, *A. likuni* Jiang & Yang, **sp. nov.** and *A. biostiolum* Jiang & Yang, **sp. nov.** from southwestern China are provided with a key to all Chinese species.

Materials and methods

The specimens were collected by sweeping (27–35 sweeps per collecting event) on shrubs and weeds using 2.5 m insect sweep nets (200 mesh) in daylight, and at sunset using a 500W high-pressure mercury lamps; all materials were preserved in absolute ethanol and stored at -20 °C in the laboratory. The abdomens of specimens were detached and soaked in 10% NaOH solution, boiled for ~ 3 min, rinsed with water to remove traces of NaOH, and transferred to glycerol for further dissection, photography, and eventually preserved in PCR tubes with glycerol. The habitus and male genitalia were photographed using a KEYENCE VHX-6000 digital camera and a Nikon Eclipse Ni-E microscope, respectively. Adobe Photoshop 2020 was used to edit compiled images. The length of the body was measured from the vertex to the rear of the forewings using a KEYENCE VHX-6000 digital camera. The morphological terminology is adapted from Young (1968, 1986) and Yang et al. (2017). The holotype and paratypes were deposited at the Institute of Entomology, Guizhou University, Guiyang, China (**GUGC**).

Taxonomy

Genus *Atkinsoniella* Distant, 1908

Atkinsoniella Distant, 1908: 235.

Soibanga Distant, 1908: 236.

Curvufacies Kuoh, 1993: 38.

Type species. *Atkinsoniella decisa* Distant, 1908, type locality India.

Distribution. Palearctic, Oriental.

Note. The comparison of male genitalia morphological characteristics of the nine similar *Atkinsoniella* species is provided in Table 1.

Atkinsoniella chongqingana Jiang & Yang, sp. nov.

<https://zoobank.org/23F7EE43-2C83-44DB-A454-43F1DC100C76>

Figs 1A–D, 2A–F

Material examined. Holotype: • ♂, Wulipo National Nature Reserve, Chongqing Municipality, CHINA, 781 m, 21 July 2021, coll. Li-Kun Zhong. **Paratypes:** • 3 ♂♂ (light trapped), Wulipo National Nature Reserve, Chongqing Municipality, CHINA, 790 m, 24 July 2021, coll. Li-Kun Zhong.

Description. Length of male 6.9–7.3 mm. Dorsum orange. Crown with one black spot in center of vertex, and one black spot below each ocelli at basal margin; eyes black; ocellus brown; pronotum with one large inverted T-shaped black spot, and one or two black vimineous spots at each lateral margin; scutellum with one large black spot at each basal angle and connected to inverted T-shaped marking on pronotum to form seemingly lung lobe-shaped marking; forewing with black longitudinal stripe in clavus, corium, and clavus suture, respectively; posterior margin, anterior margin, and veins black, apical portion black brown, anterior marginal area black-brown in some specimens; face saffron-yellow, antennal ledge with one black spot; thorax and abdomen black in ventral view; legs brown or yellowish brown.

Table 1. Comparison of male genitalia morphological characteristics of the nine similar *Atkinsoniella* species.

Species	Pygofer	Pygofer process	Aedeagus	Paraphysis	Style
<i>A. nigrominiatula</i> (Jacobi, 1944)	Posterior portion slightly widened, dorsal margin straight.	Posterior 1/2 tapered, tip acute and not exceeding posterior margin of pygofer.	Entirely short, dorsal margin nearly straight.	Paraphysis with tip tapered and bent dorsad, articulating with aedeagus apically.	Y-shaped
<i>A. latior</i> Young, 1986	Nearly rectangular with posterior margin broadly rounded.	Pygofer process extending posterodorsally, then posteriorly, attenuated and sharply curved apically.	Aedeagus wide, dorsal margin straight, apical part narrower.	Paraphysis pygofer process extending posterodorsally, then posteriorly, attenuated, and sharply curved apically.	Y-shaped
<i>A. limba</i> Kuoh, 1991	Dorsal margin with 1 angular flat process near base.	Pygofer process arising basiventrally and tapered posteriorly.	Aedeagus slender and posterior portion bent dorsad.	Paraphysis with laterally produced flattened part subapically.	Y-shaped
<i>A. dormana</i> Li, 1992	Dorsal margin with 1 angular flat process near base.	Pygofer process bent posterodorsally from median, tip acute.	Aedeagus wide basally, median with pair of triangular flat processes, tip bent dorsad.	Paraphysis with tip tapered and bent dorsad, articulating with aedeagus apically.	Nearly V-shaped
<i>A. divaricata</i> Yang, Meng & Li, 2017	Posterior margin broadly rounded, basal 1/3 of dorsal margin convex and with several macrosetae.	Posterior 1/2 bending dorsad, tip acute.	Base wide, proximal portion slightly curved dorsad.	Medially with wrinkle in ventral view, tip forked and clamped median of aedeagus.	V-shaped
<i>A. peaka</i> Yang, Meng & Li, 2017	Medially bulging outwards, tip sharply flattened and contracted into rounded protrusion, resembling peak of peaked cap.	Base with several microsetae, posterior portion acute and extending straight, tip not reaching posterior margin of pygofer.	Basal 1/3 bent dorsad, medial 1/3 portion approaching paraphysis, tip rounded.	Tip hooked and articulated with proximal aedeagus apically.	V-shaped
<i>A. zizhong</i> Jiang & Yang, 2022	Posterior portion broadly rounded and bent dorsally.	Arising basiventrally and extending dorsolateral posteriorly of pygofer, apex with transparent membrane dorsad and exceeding posterior margin of pygofer.	Base and tip concave, ventral margin concave medially, apical 1/3 portion bent dorsad, tip obtuse.	Apex acute and slightly bent dorsad, ventral margin undulating medially, and articulating with aedeagus apically.	Y-shaped
<i>A. chongqingana</i> Jiang & Yang, sp. nov.	Entirety broad, tip convex arcuately and bent dorsally	Base with short microsetae, extending arcuately and dorsolateral posteriorly of pygofer, posterior portion with lamellar membranous structures, tip acute.	Posterior 1/2 warped dorsally, tip rounded, ventral margin articulate with paraphysis at basal 1/4 and 1/2.	Basal 1/2 stipiform, posterior 1/2 widened, tip narrowed into a cusp and curved dorsally, and articulating with aedeagus apically.	Nearly V-shaped
<i>A. likuni</i> Jiang & Yang, sp. nov.	Basal 1/2 broad, posterior 1/2 narrow, tip warped dorsally, posterior margin truncate.	Entirety slender, arising basiventrally and extending along ventral margin of pygofer, slightly curved dorsally, median broadened with lamellar membranous structure, apical 1/3 narrow strip-shaped.	Entirety slender and straight, tip slightly bent dorsally, median and subbase concave at ventral margin.	Entirety slender and straight, posterior portion dilated, apex sharply tooth-shaped and bent dorsally, articulating apically with aedeagus at apical 2/5.	Y-shaped

Crown with anterior margin rounded and convex; crown surface flat except for lateral area of ocellus concave; ocellus located at imaginary line between anterior eye angles and tip of lateral clypeal suture; each ocellus further from other one than to adjacent eye; pronotum equal wide to head, anterior margin cambered, posterior margin slightly concave medially, lateral margins convergent anteriorly; scutellum with transverse depression slightly arcuate; face with frontoclypeus flat medially, muscle impressions distinct, clypeal sulcus slightly fuzzy medially; forewings with apical membranous area distinct and four apical cells, base of second cells more proximal than third cells transversely.

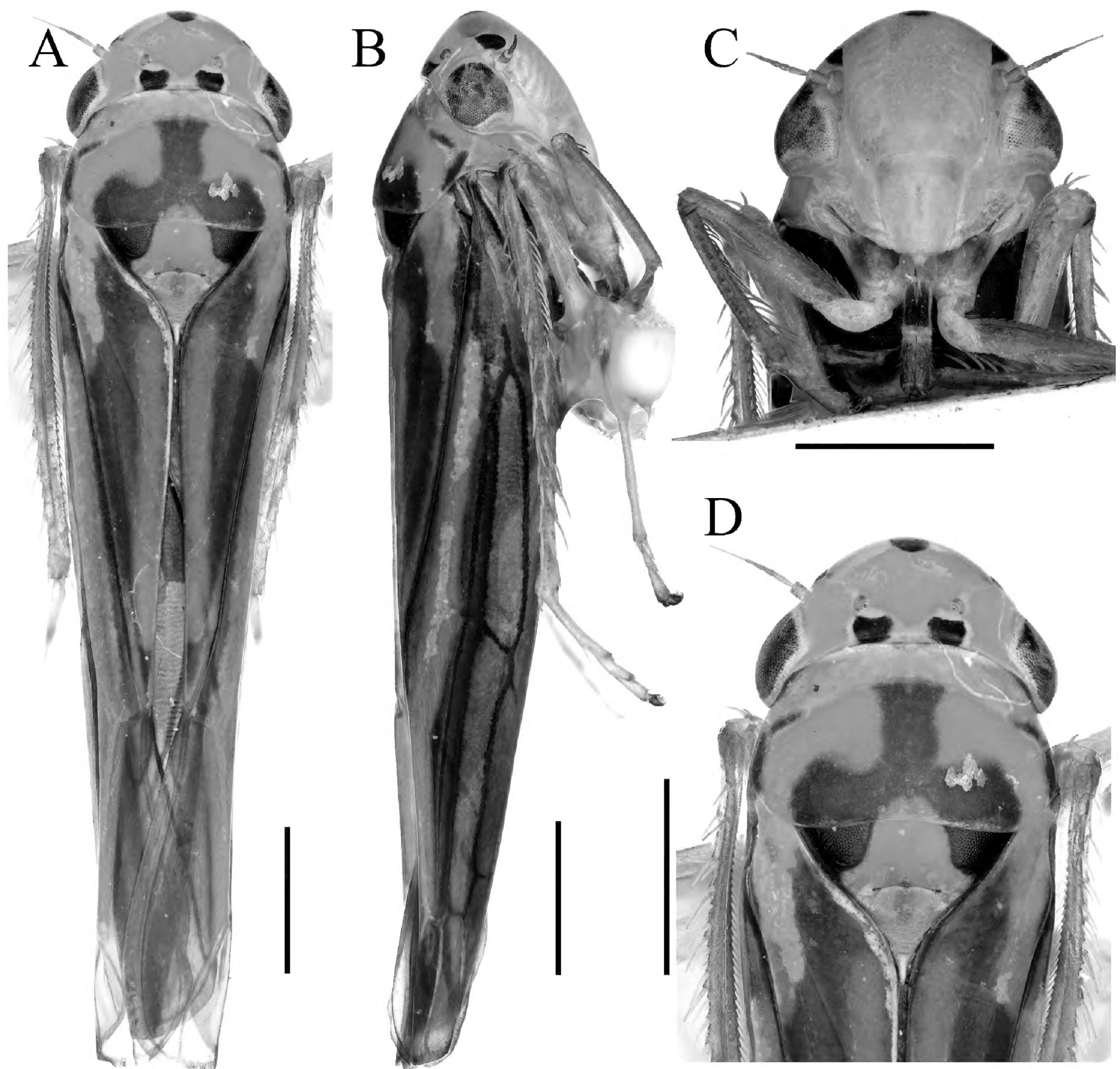


Figure 1. External features of *Atkinsoniella chongqingana* Jiang & Yang, sp. nov., male holotype **A** habitus, dorsal view **B** habitus, lateral view **C** face, anterior view **D** head and pronotum, dorsal view. Scale bars: 1000 µm.

Male pygofer broadly short, tip arcuately convex and bent dorsally, posterior 1/2 and median of dorsal margin with macrosetae; pygofer process with short microsetae at base, and arcuately extending dorsolateral posteriorly of pygofer, posterior portion with lamellar membranous structures, tip acute; subgenital plate broad at base, posterior 1/2 narrow and bent dorsally, with one uniseriate row of macrosetae obliquely, lateral margin and apical 1/2 with long and short microsetae; aedeagus stout, with posterior 1/2 relatively narrow and warped dorsally, tip rounded, ventral margin articulate with paraphysis at basal 1/4 and 1/2; paraphysis basal 1/2 stipiform, posterior 1/2 gradually widened, tip narrowed into cusp and dorsally curved, articulating with aedeagus apically; connective V-shaped; style broad and short, with tip acute and bent.

Distribution. China (Chongqing).

Etymology. The name of the new species is derived from Chongqing where the type specimens were collected.

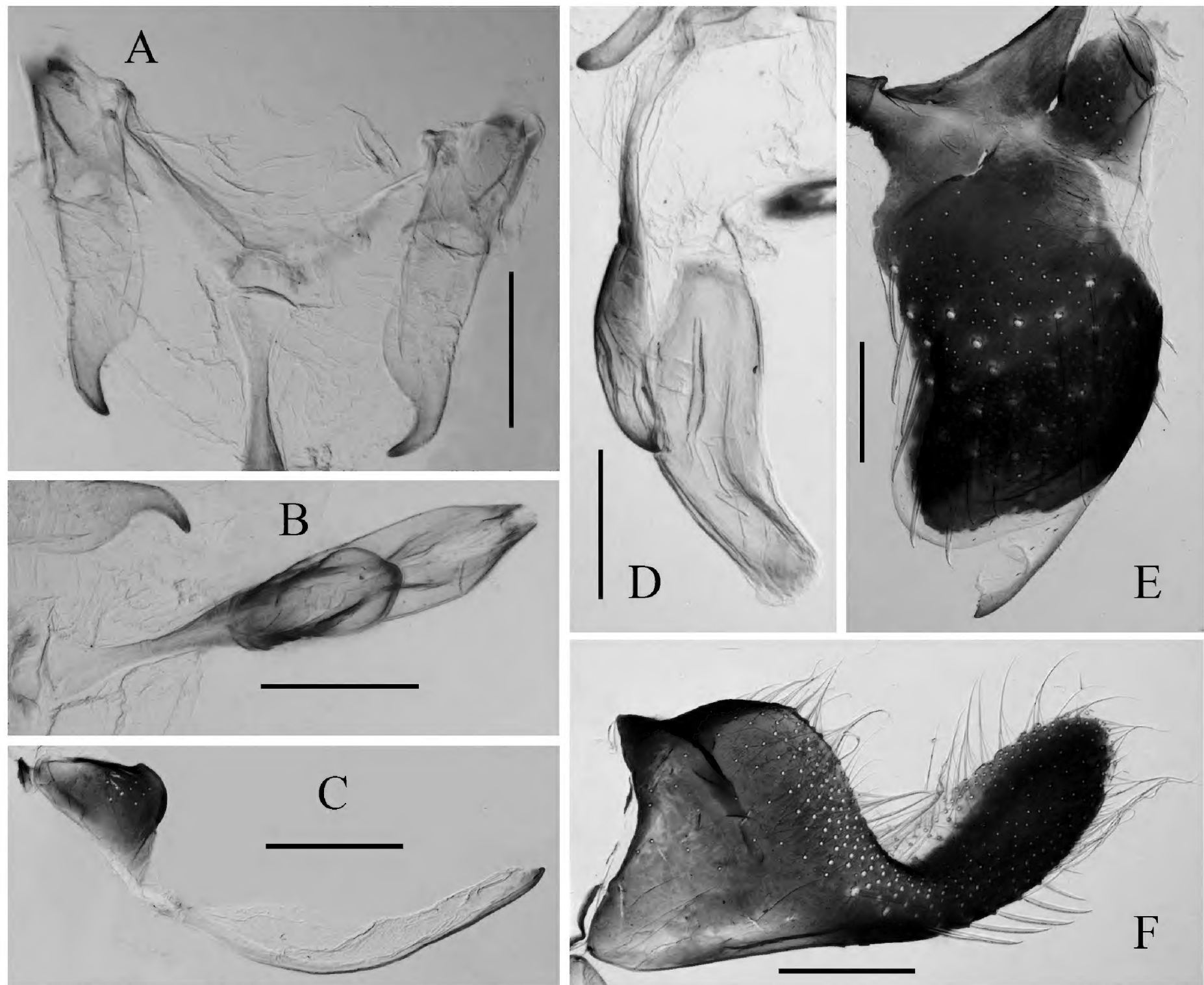


Figure 2. Male genitalia of *Atkinsoniella chongqingana* Jiang & Yang, sp. nov. **A** style **B** aedeagus and paraphysis, ventral view **C** pygofer process **D** aedeagus and paraphysis, lateral view **E** pygofer, lateral view **F** subgenital plate, ventral view. Scale bars: 200 μm.

Remarks. This species is similar to *A. nigrominiatula* (Jacobi, 1944), *A. latior* Young, 1986, *A. limba* Kuoh, 1991, *A. dormana* Li, 1992, *A. divaricata* Yang, Meng & Li, 2017, *A. peaka* Yang, Meng & Li, 2017, and *A. zizhong* Jiang & Yang, 2022 in appearance, but can be easily differentiated from these species by the following characteristics: pygofer process extending dorsolateral posteriorly of the pygofer, and its posterior portion having lamellar membranous structures; the aedeagus has its posterior 1/2 warped dorsally, and the ventral margin is articulated with the paraphysis at basal 1/4 and 1/2.

***Atkinsoniella likuni* Jiang & Yang, sp. nov.**

<https://zoobank.org/70C0BBCC-7E32-4CBF-B33E-A461F4BACAC0>

Figs 3A–D, 4A–F

Material examined. Holotype: • ♂, Wulipo National Nature Reserve, Chongqing Municipality, CHINA, 781 m, 21 July 2021, coll. Li-Kun Zhong. **Paratypes:** • 7 ♂♂ (light trapped) 2 ♂♂, Wulipo National Nature Reserve, Chongqing Municipality, CHINA, 781–1348 m, 18–24 July 2021, coll. Li-Kun Zhong.

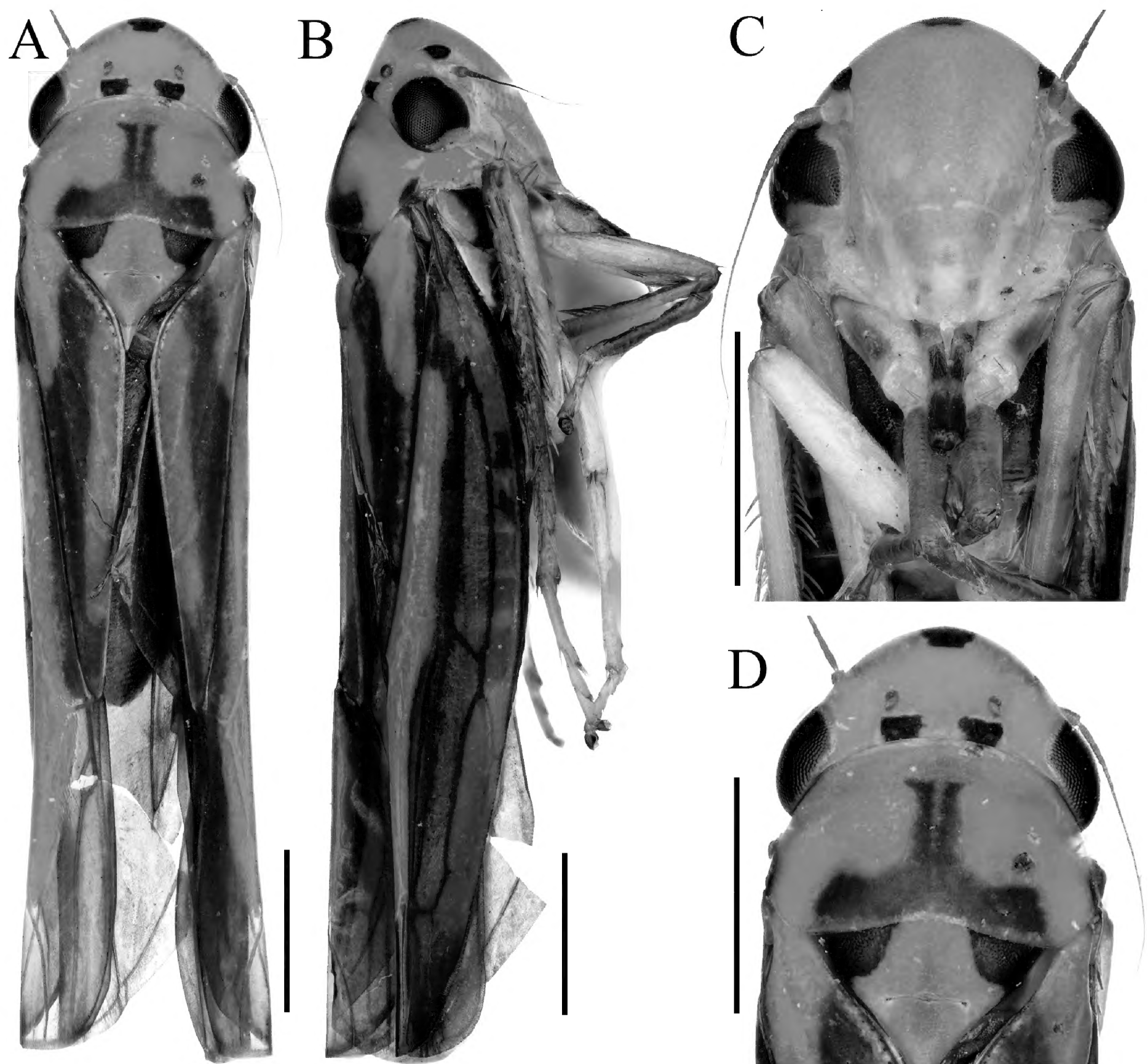


Figure 3. External features of *Atkinsoniella likuni* Jiang & Yang, sp. nov., male holotype **A** habitus, dorsal view **B** habitus, lateral view **C** face, anterior view **D** head and pronotum, dorsal view. Scale bars: 1000 μm.

Description. Length of male 6.6–6.8 mm. The appearance is similar to *Atkinsoniella chongqingana* Jiang & Yang, sp. nov. Male pygofer broadly short, tip rounded and warped dorsally, median of dorsal margin and posterior 1/2 with long macrosetae; pygofer process slender and short, arising basiventrally and extending along ventral margin of pygofer, slightly curved dorsally and not as far posteriorly as pygofer apex, median lamellar broadened with membranous structure, apical 1/3 thin strip-shaped; subgenital plates basal 3/5 area broad, apical 2/5 narrow and bent dorsally, with one row of macrosetae uniseriate obliquely, long and short dense microsetae at outer lateral area of macrosetae; aedeagus slender and straight, with tip slightly bent dorsally, subbase concave at ventral margin, ventral margin articulating with dorsal margin of paraphysis medially and basally; paraphysis slender and straight, tip dilated, apex sharp teeth shaped and bent dorsally, articulating apically with aedeagus

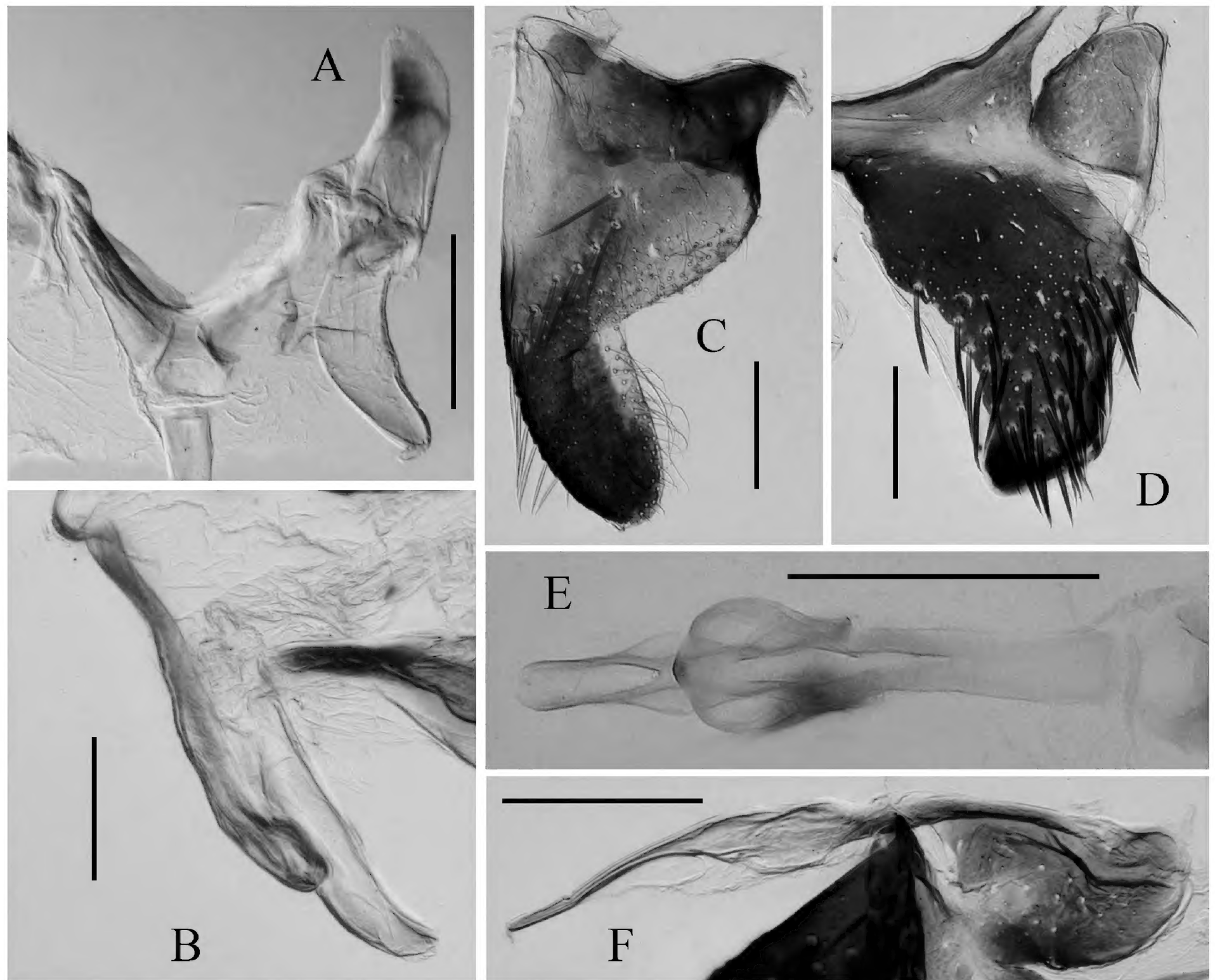


Figure 4. Male genitalia of *Atkinsoniella likuni* Jiang & Yang, sp. nov. **A** style **B** aedeagus and paraphysis, lateral view **C** subgenital plate, ventral view **D** pygofer, lateral view **E** aedeagus and paraphysis, ventral view **F** pygofer process. Scale bars: 200 μ m.

at apical 2/5 and median with aedeagus at base; connective Y-shaped; style broad at basal 2/3 and tapered at apical 1/3, apex acute and incurved.

Distribution. China (Chongqing).

Etymology. The new species is named after the first name of the collector Li-Kun Zhong.

Remarks. This species is similar to *A. nigrominiatula* (Jacobi, 1944), *A. latior* Young, 1986, *A. limba* Kuoh, 1991, *A. dormana* Li, 1992, *A. divaricata* Yang, Meng & Li, 2017, *A. peaka* Yang, Meng & Li, 2017, *A. zizhong* Jiang & Yang, 2022, and *A. chongqingana* Jiang & Yang, sp. nov. in appearance, but it can be distinguished from these species by the following characteristics: (1) pygofer process smaller and not extending beyond the posterior margin of the pygofer, the median lamella is broadened with a membranous structure; (2) the aedeagus is slender and straight, its base articulating with the median of paraphysis; (3) the articulation of the aedeagus and paraphysis is located in the apical 2/5 of the aedeagus.

***Atkinsoniella biostiolum* Jiang & Yang, sp. nov.**

<https://zoobank.org/4CA025A0-8798-4419-BD1D-57543DDB5D10>

Figs 5A–E, 6A–E, 7A–E

Material examined. Holotype: • ♂, Nongdao Town, Ruili City, Yunnan Province, CHINA, 755 m, 4 August 2020, coll. Xian-Yi Wang. **Paratypes:** • 1 ♂, the same data as holotype; 1 ♂ 4 ♀♀, Daweishan national forest park, Pingbian County, Honghe Hani and Yi Autonomous Prefecture, Yunnan Province, CHINA, 1158 m, 5 June 2019, coll. Tie-Long Xu.

Description. Length, male 5.3–5.4 mm, female 5.6–5.9 mm. Crown orange, posterior 1/2 with trapezoidal and yellow-white area medially, and one small drop-shaped black spot in center between ocellus, basal margin with triangular black spot medially and small triangular black brown spot below each ocellus, and coronal suture black with median discontinuous; eyes orange-black to black brown; ocelli grayish with black border distinctly; pronotum orange, with posterior 1/2 black, triangular orange macular area, concave medially, in center of black area, and one orange spot at each basal area laterally. Scutellum

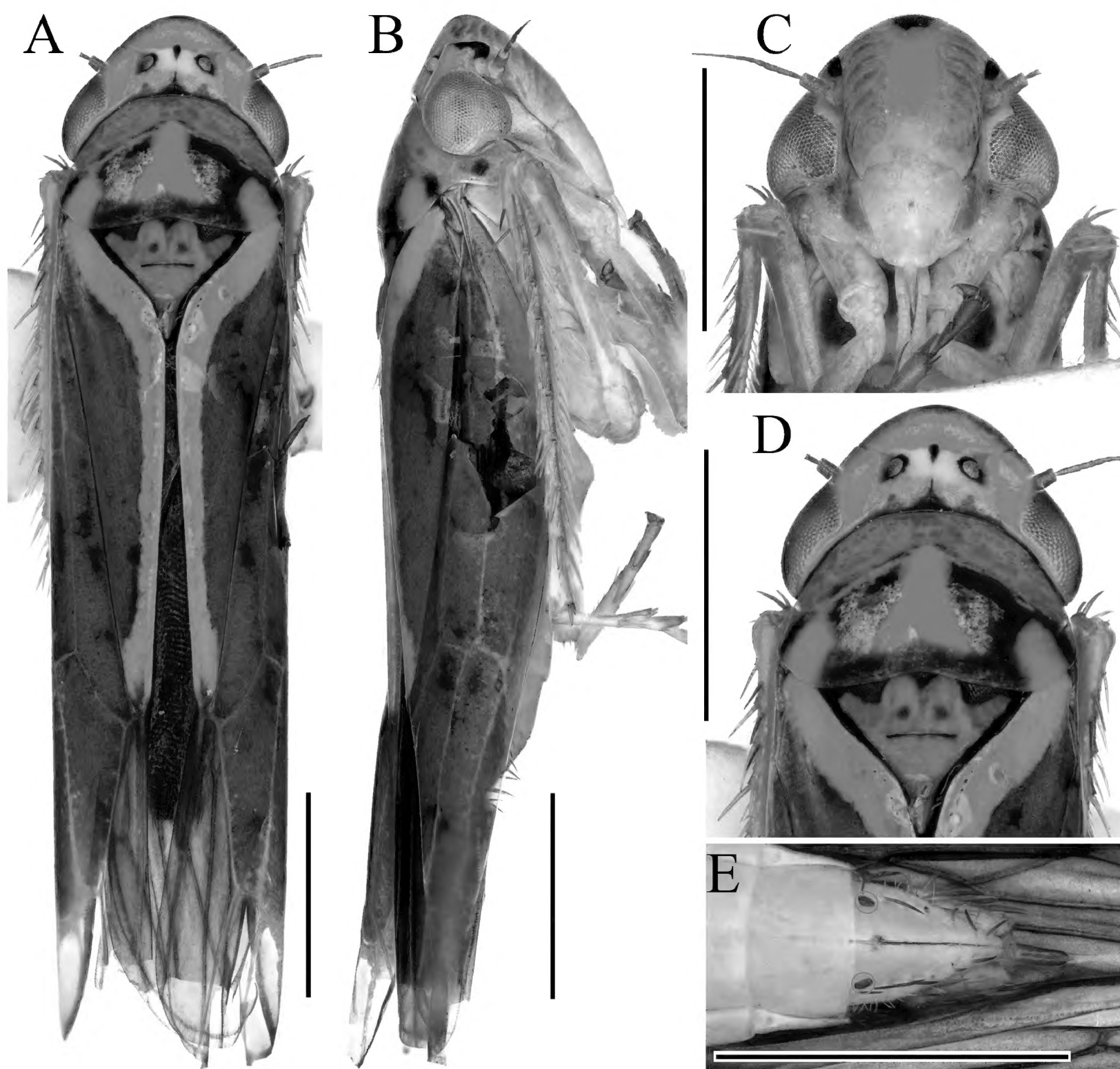


Figure 5. External features of *Atkinsoniella biostiolum* Jiang & Yang, sp. nov., male holotype **A** habitus, dorsal view **B** habitus, lateral view **C** face, anterior view **D** head and pronotum, dorsal view **E** apical portion of abdomen, ventral view (red circles indicates ostioles). Scale bars: 1000 µm.

with three triangular black spots at basal margin and apical corner dark brown, lateral margin and transverse depression black, two small black spots above transverse depression; forewings green with yellow veins, clavus bordered with orange stripes laterally and connected with orange spots laterally on pronotum, apical membranous area black-brown; face with frontoclypeus and anteclypeus orange-yellow, muscle impressions and remaining areas dark brown, with one black spot above basal margin of antennal ledge; thorax pale yellow in ventral view, with two large black spots, legs yellow-white to gray-white, forelegs with femur and tibia orange-red, tarsus and pretarsus black-brown; abdomen yellow.

Crown with anterior margin rounded and convex; coronal suture distinct and equal to median length of crown; ocelli located slightly in front of imaginary line between anterior eye angles and tip of lateral clypeal suture, distance between ocellus equal to adjacent eye; pronotum wider than head, anterior margin rounded and convex, posterior margin with median concavity angular; scutellum with medial transverse depression slightly arcuate; forewings with distinct apical membranous area, base of second cells more proximal than third cells transversely; face with frontoclypeus flat medially, muscle impressions and clypeal sulcus blurred medially; males with one ostiole in center of base of each subgenital plate (marked by red circles in Fig. 5E).

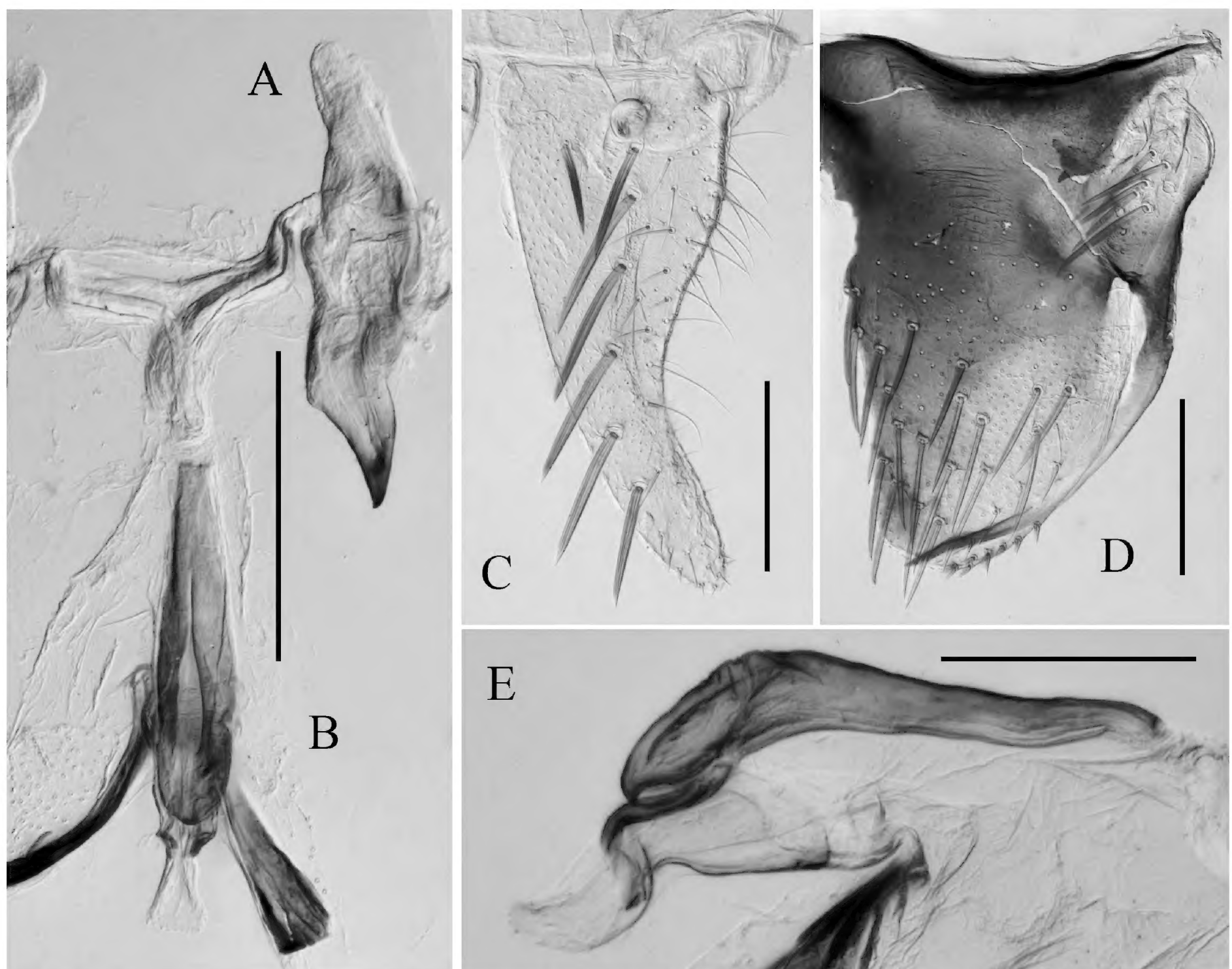


Figure 6. Male genitalia of *Atkinsoniella biostiolum* Jiang & Yang, sp. nov. **A** style **B** aedeagus and paraphysis, ventral view **C** subgenital plate, ventral view **D** pygofer, lateral view **E** aedeagus and paraphysis, lateral view. Scale bars: 200 μ m.

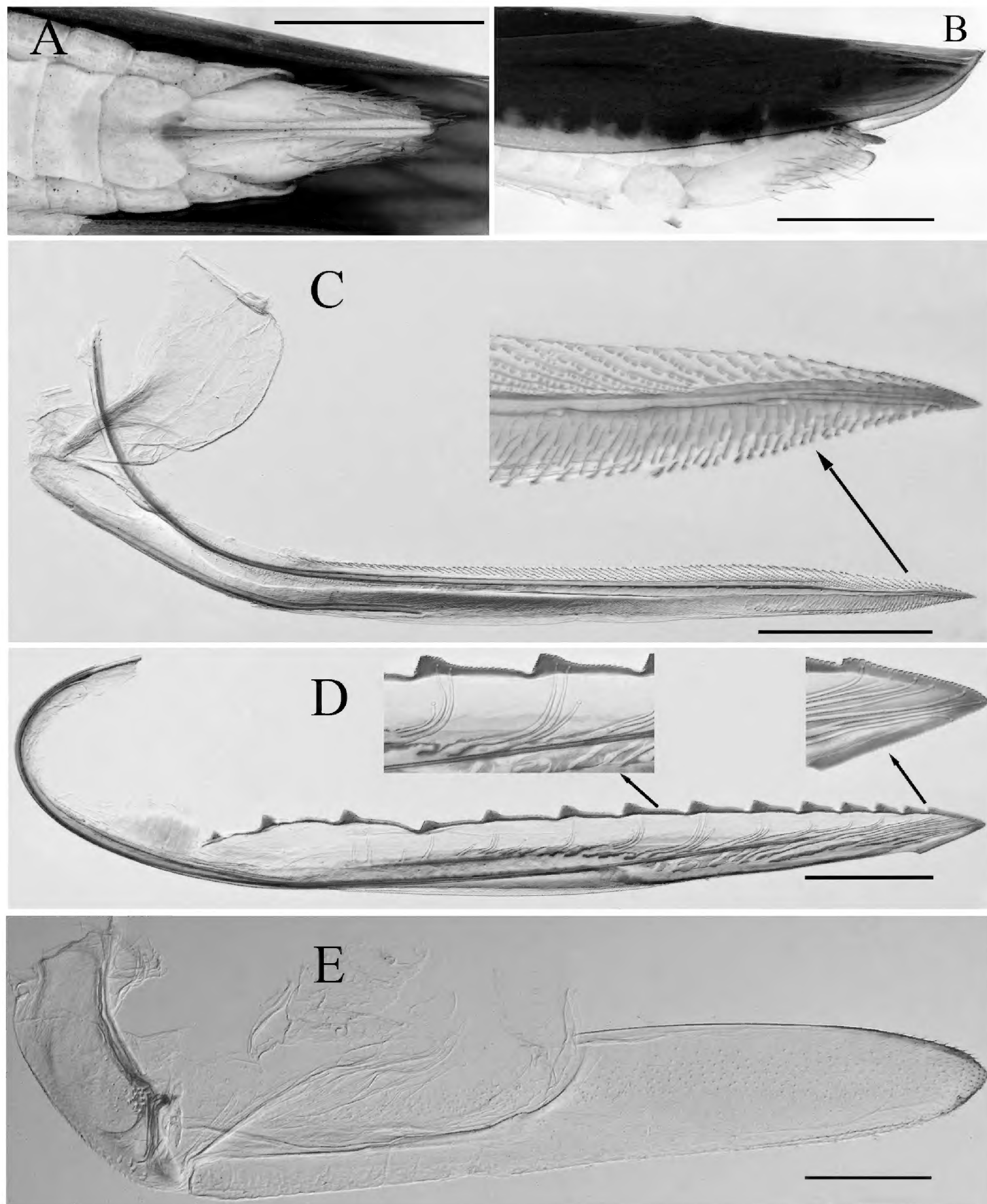


Figure 7. Female genitalia of *Atkinsoniella biostiolum* Jiang & Yang, sp. nov. **A** apical portion of abdomen, ventral view **B** apical portion of abdomen, lateral view **C** first valvifer and first valvula, lateral view **D** second valvula, lateral view **E** second valvifer and gonoplac, lateral view. Scale bars: 1000 µm (**A**, **B**), 200 µm (**C**, **D**, **E**).

Male pygofer broad, short, apex truncated, median of dorsal margin and posterior 1/2 with long macrosetae; pygofer process slender, arising basiventrally and extending along ventral margin of pygofer, slightly curved dorsally and just beyond pygofer apex posteriorly, median lamellar area broadened with membranous structure, apical 1/3 thin strip-shaped; subgenital plates with basal 3/5 broad, apical 2/5 narrow and bent dorsally, with one row of macrosetae uniseriate obliquely, long and short dense microsetae at outer lateral area of macrosetae; aedeagus warped medially and 8-shaped in lateral view, ventral margin articulating with dorsal margin of paraphysis medially; paraphysis slender and straight, tip dilated, apex teeth sharp and bent dorsally, articulating apically with aedeagus at apical 1/2; connective Y-shaped; style broad at basal 2/3 and tapered at apical 1/3, apex acute and incurved.

Female abdominal sternite VII, shorter than wide, posterior margin with median concavity; pygofer, in lateral view, produced posteriorly, posterior margin narrowly rounded with macrosetae at posterior portion and ventral margin; first valvifer longer than wide; first valvula apex acute, dorsal area with sculptured striae extending from basal portion of blade to apex; second valvula ventral preapical margin protruding, posterior portion arrow-shaped, blade with ~ 11 continuous large triangular teeth on expanded subapical portion and smaller teeth apically, all large teeth as well as ventral and dorsal margin of apical blade with denticles, ducts distributed in area of third teeth to apex of blade; third valvula basal 1/2 narrow and posterior 1/2 distinctly expanded, apex obtuse, and tiny setae distributed on apical portion and posterior 1/3 ventral margin of blade.

Distribution. China (Yunnan).

Etymology. The new species is named after the ostiole in the base of each subgenital plate.

Remarks. This species can be easily differentiated from other *Atkinsoniella* species by its color, markings, characteristics of the aedeagus, especially subgenital plates with ostioles, which is the first reported characteristics in subfamily Cicadellinae.

Key to species of *Atkinsoniella* Distant, 1908 from China (updated from Yang et al. 2017)

- 1 Forewing completely black.....***A. nigripennis* Yang & Li, 1999**
- Forewing not black or not completely black.....2
- 2 Pronotum uniform black, without distinct spots or stripes3
- Pronotum not black or not completely black20
- 3 Apical portion of crown with a median red spot
.....***A. xinfengi* Yang, Meng & Li, 2017**
- Crown without red spots.....4
- 4 Forewing black with 2 brown-yellow longitudinal stripes
.....***A. guttata* Li, 1993 (part)**
- Forewing black with red spots or stripes.....5
- 5 Forewing with red longitudinal stripes6
- Forewing with red spots or macular area10
- 6 Forewing with 2 red longitudinal stripes.....7
- Forewing with 3 red longitudinal stripes.....8
- 7 Forewing with the 2 red longitudinal stripes completely disjunctive
.....***A. nigra* Kuoh & Cai, 1994**
- Forewing with the 2 red longitudinal stripes connecting in the middle
.....***A. flavilega* Yang, Meng & Li, 2017 (part)**
- 8 Male head and frontoclypeus completely black.....
.....***A. nigrita* Zhang & Kuoh, 1993 (part)**
- Male crown anterior margin and face yellow-white with black spots or stripes9
- 9 Male vertex with a small black spot, face yellow-white without stripes.....
.....***A. nigridorsum* Kuoh & Zhuo, 1996 (part)**
- Anterior portion of male crown with single median gray spot, frontoclypeus with black longitudinal stripe on each side
.....***A. fishtaila* Yang, Meng & Li, 2017**

10	Claval suture black, dividing forewing red spots or area into 2 parts	11
–	Claval suture black partly, forewing red spots or area complete piece ...	12
11	Forewing red area apex not exceeding the end of claval suture, frontoclypeus black.....	A. <i>lii</i> Yang & Zhang, 2000
–	Forewing red area apex exceeding the end of claval suture, frontoclypeus black with a median yellow-white longitudinal stripe	A. <i>tuberostyla</i> Yang, Meng & Li, 2017
12	Forewing red area long, apex exceeding the end of claval suture	13
–	Forewing red area short, apex not exceeding or only reaching the end of claval suture.....	14
13	Male pygofer process with a short horn-like branch at apical 1/3; paraphysis bifurcate at middle, clamping aedeagus	A. <i>nigriscens</i> Yang & Li, 2004
–	Male pygofer process without branches; paraphysis not furcate with acute apex, preapical portion expanded laterally and with large dental process dorsally.....	A. <i>atrata</i> Yang, Meng & Li, 2017
14	Male pygofer process apex fork-like, paraphysis with apex longitudinally concave medially.....	A. <i>longiaurita</i> Yang, Meng & Li, 2017
–	Characters not as above	15
15	Apical 1/2 of male pygofer process with broad dorsal membranous lobe .	A. <i>membrana</i> Yang, Meng & Li, 2017
–	Male pygofer process smooth, without membranous lobe.....	16
16	Male pygofer process curved dorsad at base 1/3, becoming straight near apex 1/3	A. <i>recta</i> Yang, Meng & Li, 2017
–	Male pygofer process curved not as above.....	17
17	Male pygofer process particularly long, extending posteriorly farther than apex of pygofer.....	A. <i>longa</i> Yang, Meng & Li, 2017
–	Male pygofer process at most extending to apex of pygofer.....	18
18	Male pygofer posterodorsal angle finger-like, pygofer process right-angled and curved dorsad at middle.....	A. <i>rectangulata</i> Yang, Meng & Li, 2017
–	Characters not as above	19
19	Male pygofer with apical portion raised dorsad, apicodorsal margin acute and fishtail-shaped; aedeagus apex not expanded.....	A. <i>biundulata</i> Meng, Yang & Ni, 2010
–	Male pygofer with apical portion produced round-horned; aedeagus apex expanded	A. <i>expanda</i> Yang, Meng & Li, 2017
20	Forewing without distinct spots or stripes	21
–	Forewing with distinct spots or stripes.....	53
21	Forewing black-brown, the joint area of 2 forewings orange-red, veins of costal margin and corium orange	A. <i>xanthovena</i> Yang & Li, 2002
–	Characters of forewing not as above	22
22	Forewing of living body cyan, exsiccatae yellow-brown, forewing hyaline next to costal margin	A. <i>variata</i> Young, 1986
–	Characters of forewing not as above.....	23
23	Pronotum with distinct spots or stripes	24
–	Pronotum without distinct spots or stripes.....	27
24	Scutellum tawny or orange, with basal black side spots.....	25
–	Scutellum black completely.....	26

- 25 Scutellum tawny, apex with a black spot
.....**A. sulphurata** (Distant, 1908) (part)
- Scutellum orange, apex without black spots
.....**A. longiuscula** Feng & Zhang, 2015 (part)
- 26 Crown black, anterior 1/2 with a median yellow-white spot; inside eyes yellowish-white, region broad; male pygofer posterodorsal margin finger-like
.....**A. fuscopenna** Yang & Li, 2004
- Crown black, anterior 1/2 without median yellow-white spots, inside eyes yellowish white, region narrow; male pygofer posterodorsal margin angular
.....**A. guttata** Kuoh, 1992 (part)
- 27 Basal portion of crown without median black spots28
- Basal portion of crown with single median black spot31
- 28 Male pygofer process with apical 1/2 straightened posteriorly, exceeding apical margin of pygofer, without branch**A. uniguttata** Li, 1993
- Male pygofer process with small branch at subapex29
- 29 Apical portion of crown with large, median black squared spot; aedeagus broad and short, apex truncated**A. cyclops** (Melichar, 1914)
- Apical portion of crown without black spots or only with a minimal spot; aedeagus not as above30
- 30 Apical portion of crown without black spots, face yellowish brown, frontoclypeus with a median yellow-white longitudinal stripe; aedeagus with finger-like rounded tip**A. duna** Yang, Meng & Li, 2017
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Discussion

Currently, the identification of Cicadellinae species is mainly based on their external morphology and male genitalia characteristics of adults. However, there are some species that exhibit similar external morphologies, but the characteristics of the male genitalia are obviously different, or the characteristics of male genitalia are similar, but external morphologies are different. These situations make the identification of some Cicadellinae species difficult at species level, especially for the female specimens. *Atkinsoniella nigrominiatula* (Jacobi, 1944), *A. latior* Young, 1986, *A. limba* Kuoh, 1991, *A. dormana* Li, 1992, *A. divaricata* Yang, Meng & Li, 2017, *A. peaka* Yang, Meng & Li, 2017, *A. zizhongii* Jiang & Yang, 2022, *A. chongqingana* Jiang & Yang, sp. nov., and *A. likuni* Jiang & Yang, sp. nov. are similar in appearance but differ in their male genitalia. As the characteristics of female genitalia of subfamily Cicadellinae species are not obvious, those of the female specimens of *A. chongqingana* Jiang & Yang, sp. nov. and *A. likuni* Jiang & Yang, sp. nov. cannot be provided as the females have the same appearance, making their identification confusing; therefore, molecular methods are necessary to help solve these difficulties and provide more accurate species delimitations. In addition, the investigations into the biology and ecology may be good directions for better understanding the known and newly described leafhopper species in the future.

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Additional information

Conflict of interest

The authors have declared that no competing interests exist.

Ethical statement

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Data availability

All of the data that support the findings of this study are available in the main text.

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